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PATENT APPLICATION
Docket No.: 5204-022

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Young Suk LEE; Young Mook KANG; Sang Do LEE		
Serial No.	09/914,306	Examiner:	Crowell, Anna M
Confirmation No.	2394		
Filed:	July 16, 2002	Art Unit:	1763
For:	PLASMA PROCESSING APPARATUS AND METHOD FOR FORMING THIN FILMS USING THE SAME		

TRANSMITTAL LETTER

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Enclosed for filing in the above-referenced application are the following:

☒ Appellant's Brief under 35 CFR § 1.192.
☒ PTO Form 2038 authorizing credit card payment of $760.00 including the $250.00 filing fee for a brief in support of an appeal and $510.00 for a 4 month Extension is enclosed.
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Respectfully submitted,

MARGER JOHNSON & McCOLLOM, P.C.

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Date: August 15, 2005

Natasha French

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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APPELLANT'S BRIEF

UNDER 37 CFR §41.37

Appeal is taken from the Examiner's Office Action mailed November 15, 2004 rejecting claims 1-6 a fifth time, rejecting claim 7 a third time and rejecting claim 8 a second time.

This Appeal Brief is in furtherance of the Notice of Appeal mailed in this case on February 15, 2005.

The fees required under § 41.20(b)(2) and any required petition for extension of time for filing this Brief and fees therefore are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This Brief contains these items under the following headings, and in the order set forth below.

TABLE OF CONTENTS

I. REAL PARTY IN INTEREST

37 CFR § 41.37(c)(1)(i)

The present application has been assigned to the following party:

Jusung Engineering Co. Ltd.

49 Neungpyeong-ri, Opo-eup, Gwangju-shi,

Gyeonggi-do 464-892, Republic of Korea

II. RELATED APPEALS AND INTERFERENCES

37 CFR § 41.37(c)(1)(ii)

The Board's decision in the present Appeal will not directly affect, or be directly affected, or have any bearing on any other appeals or interferences known to the Appellant, or to the Appellant's legal representative.

III STATUS OF CLAIMS

37 CFR § 41.37(c)(1)(iii)

Status of All the Claims:

1. Claims presented: 1-10
2. Claims withdrawn from consideration but not cancelled: NONE
3. Claims cancelled: 9 and 10
4. Claims pending: 1-8

of which:

a. claims allowed: NONE

b. claims rejected: 1-8

All the rejected claims, namely claims 1-8, are being appealed. The appealed claims are eligible for appeal having been rejected at least twice.

IV. STATUS OF AMENDMENTS

37 CFR § 41.37(c)(1)(iv)

Subsequent to the last Office Action mailed on November 15, 2004, which contained rejections of all appealed claims, no amendments to the claims have been filed.

V. SUMMARY OF CLAIMED SUBJECT MATTER
37 CFR § 41.37(c)(1)(v)

There are four independent claims 1, 3, 5 and 8 involved in this appeal. Neither the independent claims nor the dependent claims contain "means-plus-function" language.

A. Independent claim 1

An apparatus for forming a thin film, the apparatus comprising:

a chamber having a gas inlet and a gas outlet, said chamber having an upper part with a dome configuration;

a susceptor provided in said chamber to place the wafer thereon; and

a non-mesh plasma electrode to which RF power is applied to generate a plasma within said chamber, the non-mesh plasma electrode structured to form a thin film on a wafer;

wherein said plasma electrode is of a truncated dome shape to cover said upper part, and wherein the electrode has a lower opening and an upper opening, and wherein a diameter of the upper opening is sized to form a thin film having a uniform thickness,

wherein the upper opening overlying the lower opening, the upper opening having a diameter smaller than the lower opening, the lower opening closer to the susceptor than the upper opening.

FIG. 3 is illustrative of a "*truncated dome shape*" plasma electrode according to exemplary embodiments of the invention (page 4, line 30—page 5, line 11). As described in the specification at page 5, lines 5-11 and shown in FIG. 3, the truncated dome shape of the plasma electrode 110 is formed by "cutting the [dome shape] electrode 110 horizontally at its *upper polar part.*" (Emphases added.)

B. Independent Claim 3

A thin film forming method using a semiconductor device manufacturing apparatus comprising a chamber having a gas inlet and a gas outlet, said chamber having an upper part with a dome configuration, a susceptor provided in said chamber to place a wafer thereon; and a non-mesh plasma electrode to which RF

power is applied to generate a plasma within said chamber, wherein said plasma electrode is of a truncated dome shape to cover said upper part, wherein the electrode has a lower opening and an upper opening, and wherein a diameter of the upper opening is sized to form a thin film having a uniform thickness, wherein the upper opening overlying the lower opening, the upper opening having a diameter smaller than the lower opening, the lower opening closer to the susceptor than the upper opening; and

applying said plasma electrode with RF power of about 700W to 1000W when using a hydrogen containing plasma to form a Si_xN_y thin film having a uniform thickness.

FIG. 3 is illustrative of the "*truncated dome shape*" plasma electrode according to exemplary embodiments of the invention. As noted above, the specification at page 5, lines 5-11 describes the truncated dome shape of the [dome shape] plasma electrode as being formed by "cutting the electrode 110 horizontally at its *upper polar part.*" (Emphases added.)

C. Independent claim 5

A thin film forming method using a semiconductor device manufacturing apparatus comprising a chamber having a gas inlet and a gas outlet, said chamber having an upper part with a dome configuration, a susceptor provided in said chamber to place a wafer thereon; and a non-mesh plasma electrode to which RF power is applied to generate a plasma within said chamber, wherein said plasma electrode is of a truncated dome shape to cover said upper part, wherein the electrode has a lower opening and an upper opening, and wherein a diameter of the upper opening is sized to form a thin film having a uniform thickness, wherein the upper opening overlying the lower opening, the upper opening having a diameter smaller than the lower opening, the lower opening closer to the susceptor than the upper opening; and

applying said plasma electrode with RF power of about 500W to 1000W when using a hydrogen containing plasma to form a DLC thin film or SiC thin film having a uniform thickness.

FIG. 3 is illustrative of the "*truncated dome shape*" plasma electrode according to exemplary embodiments of the invention. As noted above, the specification at page 5, lines 5-11 describes the truncated dome shape of the [dome

shape] plasma electrode as being formed by "cutting the electrode 110 horizontally at its *upper polar part*." (Emphases added.)

D. Independent claim 8

An apparatus for forming a thin film, the apparatus comprising:

a chamber having a gas inlet and a gas outlet, said chamber having an upper part with a dome configuration;

a susceptor provided in said chamber to place a wafer thereon; and

a non-mesh plasma electrode to which RF power is applied to generate a plasma within said chamber;

wherein said plasma electrode is of a dome shape to cover said upper part wherein the electrode has an upper opening sized to deposit a thin film having a uniform thickness on a wafer,

wherein the upper opening overlying the lower opening, the upper opening having a diameter smaller than the lower opening, the lower opening closer to the susceptor than the upper opening,

wherein said upper opening has a diameter of about 70mm to 300mm.

FIG. 3 illustrates that the plasma electrode 110 has a "*dome shape*" with an upper opening A having a diameter smaller than the lower opening according to exemplary embodiments of the invention. At page 5, lines 5-11, the opening A is described as being formed by "cutting the [upper dome shape part of] electrode 110 horizontally at its *upper polar part*." (Emphases added.)

VI. GROUNDS OF REJECTION TO BE REVIEWED UPON APPEAL 37 CFR § 41.37(c)(1)(vi)

A. Whether claims 1,2, 7 and 8 are unpatentable under 35 U.S.C. § 103(a) by U.S. Patent No. 5,254,214 to Hijikata et al. ("Hijikata") in view of U.S. Patent No. 5,716,485 to Salimian et al. ("Salimian").

B. Whether claims 3-4 are unpatentable under 35 U.S.C. § 103(a) over Hijikata in view of Salimian and in further view of U.S. Patent No. 4,539,068 to Takagi et al. ("Takagi").

C. Whether claims 5-6 are unpatentable under 35 U.S.C. § 103(a) over Hijikata in view of Salimian and in further view of U.S. Patent No. 5,645,900 to Ong et al. ("Ong").

VII. ARGUMENT

37 CFR § 41.37(c)(1)(vii)

A. Claims 1, 2, 7 and 8 are allowable over the combination of Hijikata and Salimian because the combination fails to disclose a truncated dome shaped plasma electrode oriented in the manner claimed in independent claims 1 and 8, and even if the combination is construed to disclose the claimed orientation neither Hijikata nor Salimian provide a motivation to combine to produce the embodiments recited in independent claims 1 and 8.

Both independent claims 1 and 8 recite a truncated dome-shaped plasma electrode having a specific orientation such that the larger diameter lower opening is closer to the susceptor and such that the smaller diameter upper opening is sized to form a thin film of uniform thickness . Salimian is cited by the Examiner as providing a truncated dome-shaped plasma electrode. Salimian, however, discloses orienting a cone-shaped electrode as shown in FIGS. 4, 6-8, or alternatively a pyramidal electrode as shown in Figs. 12-14, or alternatively a dome-shaped electrode as shown in FIGS. 15-17, in a manner precisely opposite to that which is claimed and described in the present application. Salimian teaches orienting the truncated dome-shaped electrode of Fig. 16 and all other such electrodes so that the "apex" (the end with the smaller diameter opening) is positioned closer to the wafer being etched (see, for example, FIG. 4).

In the Office Action dated November 15, 2004, the Examiner countered the argument of dome orientation by saying that Salimian is merely used for teaching the shape of a truncated dome with an upper opening of a specific size and that Hijikata is relied upon for teaching a smaller diameter upper opening overlying a larger diameter lower opening.

First, the opening described by the Examiner as being an "upper" opening in the Salimian truncated dome is not an upper opening but a lower opening as it is used in the art taught by Salimian. Second, it is geometrically and physically impossible to combine the truncated dome of Salimian as it is taught to be oriented with the smaller

diameter upper opening of Hijikata without reorienting the Salimian dome by literally turning it on its head.

Even if the combination could be construed to provide a truncated dome-shaped plasma electrode oriented as claimed in the present application (with which the Appellant does not agree), the reference alone or combination completely lack any motivation to combine the elements to produce the claimed embodiments. This is because both are concerned mainly with etching--not thin-film deposition--and because the two have completely different purposes even in their contrary field of endeavor. Salimian's purpose is controlling uniformity of plasma etch (see FIGS. 19 and 20) while Hijikata's purpose is flattening insulating or metal film by corner taper-etching of lands (see the abstract and FIGS. 2(b) and 2(C).

The application on appeal, as recited in independent claims 1 and 8 and described within the specification, is concerned with providing an apparatus for forming a thin film of uniform thickness and high quality. As stated at page 3, lines 5-19 of the present application, a factor affecting the quality of the film is adequate decomposition of hydrogen atoms in the supplied mixed gases. As stated, the "hydrogen atoms are not completely decomposed if RF power is weak." However, too strong an RF power results in non-uniform film thickness as shown in prior art FIG. 2B. The claimed orientation of the dome-shaped plasma electrode allows for enough RF power to decompose the hydrogen atoms, and the claimed configuration of the dome-shaped plasma electrode, formed by truncating the *upper polar* portion of the dome to form an upper opening therein of smaller diameter than the lower opening allows for the deposition of uniform film thickness.

The Examiner impermissibly ignores expressly claimed structural limitations regarding both the configuration of the plasma electrode *and* the orientation thereof. The Examiner also impermissibly ignores expressly claimed functional limitations regarding the intended use of the claimed structure ("for forming a thin film") and certain claimed functional limitations thereof ("upper opening is sized to form a thin film having uniform thickness"). Finally, the Examiner impermissibly fails to read the claims for patentability in light of the specification, including the drawings, thus ignoring the importance of the illuminating drawing of Fig. 3 in which is clearly shown how the claimed truncated dome shape of the dome shape electrode is formed by cutting it horizontally at its "upper polar part." (Specification, page 5, lines 5-11.)

A fair reading of claims 1, 2, 7 and 8 in light of the specification gives meaning to the upper opening "sized to [form or] deposit a thin film having a uniform

thickness [on a wafer]", as expressly recited in independent claims 1 and 8. Thus, the Examiner's dismissal of this express language of limitation is based on a mis-reading of the language as being only functional. FIG. 3 of the application as originally filed clearly illuminates what is meant by this structural sizing limitation for upper opening A, which can be clearly seen even at a glance to be between approximately two-fifths and three-fifths, e.g. approximately one-half, the diameter of the lower opening in truncated dome shape electrode 110, and which is described in the specification as originally filed as being from about 70-300mm in diameter (see independent claim 8, which contains an express size range nowhere found in the prior art).

Moreover, the specification illuminates this sizing limitation in another way, by describing how to form the truncated dome shape by the "cutting of electrode 110 horizontally at its upper *polar part.*" Page 5, lines 5-11. When this is read in view of FIG. 3, the structure of the claimed invention becomes very clear in terms of the "diameter of the upper opening [that] is sized to form a thin film having a uniform thickness." The hemispherical dome shown in FIG. 3 resembles a globe of planet Earth, the polar region (e.g. approximately that region North of the Arctic Circle) of which is cut open.

Thus, a hole for an entirely different purpose such as that of introducing a tube 204 into a bell-jar chamber 202 (see Hijikata at column 4) is not such an opening and does not suggest such an opening. Similarly, a lower, downward-facing opening 106 (more like the region South of the Antarctic Circle) in a dome-shaped electrode (see Salimian at column 7) is not such an opening and does not suggest such an opening. Indeed, Salimian teaches away from inverting or relocating its openings. See Column 7, lines 42-48 ("In each case, they should be installed in the position marked "A" adjacent to and contacting; the powered electrode of the FIG. 2 and FIG. 4 reactors, the grounded electrode of the FIG. 1 reactor; and the floating electrode of the FIG. 3 reactor.") Clearly, from Salimian's teachings, the electrodes must also be so oriented. Otherwise, they completely fail in their intended purpose: plasma etching.

In contrast, Salimian is directed toward reducing the plasma density in certain regions for producing uniform etching of wafers. At column 6, lines 31-40, Salimian teaches that the electrode shape should be "roughly the opposite shape of the differential etch profile." Salimian does not teach anything about the decomposition of hydrogen atoms during film deposition. This is because Salimian is all about etching substrates and nothing about depositing thin films.

The Examiner suggests—without presenting any evidence or even putting forth any reason--that one can simply change the gases to jump from Salimian's etch teachings to appellants' thin film formation teachings. This assertion completely ignores the differences between controlled etching and controlled thin film deposition, and ignores the significant differences between the set of gases used for etching and for deposition, the gases' different behaviors under various RF power levels, and the various hydrogen atom levels in the gases and the various resulting decomposition rates therefore under low RF power levels.

Thus, Salimian provides no motivation at all for using a truncated dome-shaped plasma electrode for thin film deposition. Further, as admitted by the Examiner, Hijikata teaches nothing regarding truncated-dome shaped plasma electrodes. Moreover, the two references are inconsistent with one another in their approach—Salimian seeks to control wafer thickness and uniformity of profile (see FIGS. 19 and 20), while Hijikata seeks to differentially etch around land areas on a substrate by etching sharp corners more than flat areas there or therebetween (see FIGS. 2(B) and 2(C). As such, the teachings are contradictory and thus do not produce any credible motivation for their combination. Absent any motivation to combine the two references, the two references cannot be combined. And of course the required motivation must come from the references themselves at the time they were published—it cannot borrow from appellants' disclosure; it cannot be hindsight, piece-meal reconstruction; it cannot look forward in time to appellants' present invention disclosure.

The Examiner impermissibly ignores appellants' limitation regarding the size of the upper opening, arguing it is merely functional and accordable no weight. Appellants traverse the Examiner's argument. The Examiner cites Ex parte Masham and In re Schreiber. To the contrary, it is well established that there is nothing inherently wrong with defining some part of an invention in functional terms. See MPEP 2173.05(g) and cases cited therein.

Functional language does not, in and of itself, render a claim improper. *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971). A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. A functional limitation is often used in association with an element, ingredient, or step of a process to define a particular capability or purpose that is served by the recited element, ingredient or step. It has been held that the limitation

used to define a radical on a chemical compound as "incapable of forming a dye with said oxidizing developing agent" although functional, was perfectly acceptable because it set definite boundaries on the patent protection sought. *In re Barr*, 444 F.2d 588, 170 USPQ 33 (CCPA 1971).

In a claim that was directed to a kit of component parts capable of being assembled, the Court held that limitations such as "members adapted to be positioned" and "portions . . . being resiliently dilatable whereby said housing may be slidably positioned" serve to precisely define present structural attributes of interrelated component parts of the claimed assembly. *In re Venezia*, 530 F.2d 956, 189 USPQ 149 (CCPA 1976).

Appellants submit that their limitation regarding the size of the upper opening in the truncated dome shaped electrode is more like the "incapable of forming a dye" or "resiliently dilutable" limitations of Barr and Venezia than they are like those of Masham and Schreiber, cited by the Examiner.

Similarly to these cases discussed above, appellants' limitation "a diameter of the upper opening is sized to form a thin film having a uniform thickness" defines the upper opening in a manner that would be clear to a person of ordinary skill in the art, thus precisely defining structural attributes and boundaries. Like the negative limitation in *Barr*, the recited limitation establishes boundaries regarding a structural attribute—opening diameter or size—that distinguishes both cited prior art references having to do mainly with etching. This is especially so in view of FIG. 3, which forms a part of the specification *in the light of which the claims are to be read, and which concerns an electrode clearly unlike that of Hijikata, whose purpose is tube openings to bell-jar chambers for introducing etchants and etching for flatness, and oriented unlike that of Salimian, whose purpose is a lower, smaller electrode opening closer to the substrate holder for directing RF power for uniform etching.*

Thus, independent claims 1 and 8 are believed to be allowable over the combination of Hijikata and Salimian and allowance is respectfully requested.

Claims 2 and 7 depend from claim 1, and for at least the reasons given for claim 1, these claims are believed to be allowable and allowance is respectfully requested.

B. Claims 3-4 are allowable over the combination of Hijikata, Salimian and Takagi because the combination fails to disclose a truncated dome shaped plasma electrode configured and oriented in the manner claimed in independent claim 3, and even if the combination is construed to disclose the claimed orientation neither Hijikata, Salimian nor Takagi provide a motivation to combine to produce the embodiments recited in independent claim 3.

Similar to independent claims 1 and 8, claim 3 recites a truncated dome-shaped plasma electrode oriented such that the smaller diameter upper opening overlies the larger diameter lower opening, with the lower opening positioned closer to the susceptor.

As explained above, Salimian does not disclose a properly oriented truncated dome-shaped plasma electrode. The orientation of the electrode in Salimian is reverse that which is recited in claim 3. It is physically impossible to get to claim 3 of the present application without reversing the orientation of the truncated dome in Salimian.

Further, as noted above, even if the combination of Hijikata and Salimian could be construed to provide a properly oriented truncated dome-shaped plasma electrode (which the Appellant does not, for all the reasons stated above), neither reference provides any teaching of a motivation to combine the elements. Salimian is directed toward affecting the profile of an etch being performed on a wafer and discloses the specific orientation of the truncated dome to be such that the "apex" be the lower opening. Any other orientation or position of Salimian's electrodes would utterly defeat Salimian's purpose and would render an inoperable reactor.

The addition of Takagi does not cure the deficiencies of the combination of Hijikata and Salimian. Thus, the combination of Hijikata, Salimian and Takagi does not present a *prima facie* case of obviousness with respect to claim 3.

Therefore, independent claim 3 is believed to be allowable over the cited combination and allowance is respectfully requested.

Claim 4 depends from claim 3, and for at least the same reasons given for claim 3, this claim is believed to be allowable and allowance is respectfully requested.

C. Claims 5-6 are allowable over the combination of Hijikata, Salimian and Ong because the combination fails to disclose a truncated dome shaped plasma electrode oriented in the manner claimed in independent claim 5, and even if the combination is construed to disclose the claimed orientation neither Hijikata, Salimian nor Ong provide a motivation to combine to produce the embodiments recited in independent claim 5.

Similar to independent claims 1, 3 and 8, claim 5 recites a truncated dome-shaped plasma electrode oriented such that the smaller diameter upper opening overlies the larger diameter lower opening, with the lower opening positioned closer to the susceptor.

As explained above, Salimian does not disclose a properly oriented truncated dome-shaped plasma electrode. The orientation of the electrode in Salimian is reverse that which is recited in claim 5. It is physically impossible to get to claim 5 of the present application without reversing the orientation of the truncated dome in Salimian. Such a reversal cannot be obvious, since the reversal would render the Salimian reactor inoperable.

Further, again as noted above, even if the combination of Hijikata and Salimian could be construed to provide a properly oriented truncated dome-shaped plasma electrode (which point Appellant does not concede, for all the reasons stated above), neither reference provides any teaching of a motivation to combine the elements. Salimian is directed toward affecting the profile of an etch being performed on a wafer and discloses the specific orientation of the truncated dome to be such that the "apex" be the lower opening.

The addition of Ong does not cure the deficiencies of the combination of Hijikata and Salimian. Thus, the combination of Hijikata, Salimian and Ong does not present a *prima facie* case of obviousness with respect to claim 5.

Therefore, independent claim 5 is believed to be allowable over the cited combination and allowance is respectfully requested.

Claim 6 depends from claim 5, and for at least the same reasons given for claim 5, this claim is believed to be allowable and allowance is respectfully requested.

VIII. CLAIMS APPENDIX

37 CFR § 41.37(c)(1)(viii)

The text of the claims on appeal (1-8) is:

1. (Previously Presented) An apparatus for forming a thin film, the apparatus comprising:

a chamber having a gas inlet and a gas outlet, said chamber having an upper part with a dome configuration;

a susceptor provided in said chamber to place the wafer thereon; and

a non-mesh plasma electrode to which RF power is applied to generate a plasma within said chamber, the non-mesh plasma electrode structured to form a thin film on a wafer;

wherein said plasma electrode is of a truncated dome shape to cover said upper part, and wherein the electrode has a lower opening and an upper opening, and wherein a diameter of the upper opening is sized to form a thin film having a uniform thickness,

wherein the upper opening overlying the lower opening, the upper opening having a diameter smaller than the lower opening, the lower opening closer to the susceptor than the upper opening.

2. (Previously Presented) The semiconductor device manufacturing apparatus according to claim 1, said upper opening has a width of about 70mm to 300mm.

3. (Previously Presented) A thin film forming method using a semiconductor device manufacturing apparatus comprising a chamber having a gas inlet and a gas outlet, said chamber having an upper part with a dome configuration, a susceptor provided in said chamber to place a wafer thereon; and a non-mesh plasma electrode to which RF power is applied to generate a plasma within said chamber, wherein said plasma electrode is of a truncated dome shape to cover said upper part, wherein the electrode has a lower opening and an upper opening, and wherein a diameter of the upper opening is sized to form a thin film having a uniform thickness, wherein the upper opening overlying the lower opening, the upper opening having a diameter smaller than the lower opening, the lower opening closer to the susceptor than the upper opening; and

applying said plasma electrode with RF power of about 700W to 1000W when using a hydrogen containing plasma to form a Si_xN_y thin film having a uniform thickness.

4. (Previously Presented) The thin film forming method according to claim 3, said hydrogen containing plasma is formed by a gas mixture of SiH_4 and NH_3.

5. (Previously Presented) A thin film forming method using a semiconductor device manufacturing apparatus comprising a chamber having a gas inlet and a gas outlet, said chamber having an upper part with a dome configuration, a susceptor provided in said chamber to place a wafer thereon; and a non-mesh plasma electrode to which RF power is applied to generate a plasma within said chamber, wherein said plasma electrode is of a truncated dome shape to cover said upper part, wherein the electrode has a lower opening and an upper opening, and wherein a diameter of the upper opening is sized to form a thin film having a uniform thickness, wherein the upper opening overlying the lower opening, the upper opening having a diameter smaller than the lower opening, the lower opening closer to the susceptor than the upper opening; and

applying said plasma electrode with RF power of about 500W to 1000W when using a hydrogen containing plasma to form a DLC thin film or SiC thin film having a uniform thickness.

6. (Previously Presented) The thin film forming method according to claim 5, said hydrogen containing plasma is formed by a gas mixture of CH_4 and H_2 when forming said DLC thin film, and by a gas mixture of SiH_4, CH_4 and H_2 when forming said SiC thin film.

7. (Previously Presented) The apparatus of claim 1, wherein an inner diameter of the electrode gradually becomes smaller from the bottom of the electrode toward the top of thereof.

8. (Previously Presented) An apparatus for forming a thin film, the apparatus comprising:

a chamber having a gas inlet and a gas outlet, said chamber having an upper part with a dome configuration;

a susceptor provided in said chamber to place a wafer thereon; and

a non-mesh plasma electrode to which RF power is applied to generate a plasma within said chamber;

wherein said plasma electrode is of a dome shape to cover said upper part wherein the electrode has an upper opening sized to deposit a thin film having a uniform thickness on a wafer,

wherein the upper opening overlying the lower opening, the upper opening having a diameter smaller than the lower opening, the lower opening closer to the susceptor than the upper opening,

wherein said upper opening has a diameter of about 70mm to 300mm.

IX. EVIDENCE APPENDIX

37 CFR § 41.37(c)(1)(ix)

No evidence was submitted pursuant to 37 CFR §§ 1.130, 1.131 or 1.132 of this title, nor was any other evidence entered by the Examiner and relied upon by the appellant in the appeal.

X. RELATED PROCEEDINGS APPENDIX

37 CFR § 41.37(c)(1)(x)

No Related proceeding was identified pursuant to 37 CFR § 41.37(c)(1)(ii) of this section.

CONCLUSION

The Appellant requests favorable consideration by the Board. If any questions remain, please call the undersigned.

Respectfully submitted,

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Date: August 15, 2005

Natasha French